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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,524	06/20/2000	Harry J. Beatty, III	FIS9-1999-0319-US1	5261

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EXAMINER

ALI, SYED J

ART UNIT	PAPER NUMBER
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2127

DATE MAILED: 07/30/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/597,524

Applicant(s)

BEATTY, III ET AL.

Examiner

Syed J Ali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on June 8, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the appeal brief filed June 8, 2004. Claims 1-16 are presented for examination.

2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1-5, 7-9, and 11-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Achenson et al. (USPN 6,477,586) (hereinafter Achenson).**

5. As per claim 1, Achenson teaches the invention as claimed, including a method of parallel processing comprising:

providing a first thread which represents an independent flow of control managed by a program structure (col. 5 lines 36-57), said first thread having two states, a first state processing work for the program structure (col. 5 lines 55-59) and a second state undispatched awaiting work to process (col. 5 lines 45-47);

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providing a second thread which represents an independent flow of control managed by a program structure separate from the first thread (col. 5 lines 33-35);

using the second thread to prepare work for the first thread to process (col. 5 lines 55-59; col. 6 lines 38-41; col. 6 lines 50-54);

placing the work prepared by the second thread in a queue for processing by the first thread (col. 6 lines 50-54);

if the first thread is awaiting work to process when the work prepared by the second thread is placed in the queue, dispatching the first thread and using it to process the work in the queue (col. 5 lines 45-47; col. 6 lines 27-63);

if the first thread is processing other work when the work prepared by the second thread is placed in the queue, using the first thread to complete processing of the other work, access the work in the queue, and then process the work in the queue (col. 6 lines 48-63).

6. As per claim 2, Achenson teaches the invention as claimed, including the method of claim 1 wherein the second thread continues to place additional work in the queue, and the first thread sequentially processes the additional work in the queue as it completes processing prior work (col. 6 lines 27-63).

7. As per claim 3, Achenson teaches the invention as claimed, including the method of claim 1 wherein the second thread marks the work placed in the first thread queue as not complete (col. 6 lines 27-63).

8. As per claim 4, Achenson teaches the invention as claimed, including the method of claim 1 wherein if the first thread is processing other work when the work prepared by the second thread is placed in the queue, and when the first thread completes processing of the work in the queue, using the first thread to mark the completed work as complete, wherein subsequent work from the second thread is made to wait until the previous work in the first thread is marked complete (col. 5 line 26 - col. 6 line 63).

9. As per claim 5, Achenson teaches the invention as claimed, including the method of claim 1 wherein the first thread is reused to process other work (col. 5 lines 45-47; col. 6 lines 50-54).

10. As per claim 7, Achenson teaches the invention as claimed, including a method of parallel processing comprising:

providing a first thread which represents an independent flow of control managed by a program structure (col. 5 lines 36-57), said first thread having two states, a first state processing work for the program structure (col. 5 lines 55-59) and a second state undispached awaiting work to process (col. 5 lines 45-47);

providing a second thread which represents an independent flow of control managed by a program structure separate from the first thread (col. 5 lines 33-35);

using the second thread to prepare work for the first thread to process (col. 5 lines 55-59; col. 6 lines 38-41; col. 6 lines 50-54);

placing the work prepared by the second thread in a queue for processing by the first thread (col. 6 lines 50-54), the work placed in the first thread queue being marked as not complete (col. 6 lines 27-63);

if the first thread is awaiting work to process when the work prepared by the second thread is placed in the queue, dispatching the first thread and using it to process the work in the queue (col. 5 lines 45-47; col. 6 lines 27-63);

if the first thread is processing other work when the work prepared by the second thread is placed in the queue, using the first thread to complete processing of the other work, access the work in the queue, and then process the work in the queue (col. 6 lines 48-63); and

using the second thread to place additional work in the queue (col. 6 lines 27-63); and

using the first thread to sequentially process the additional work in the queue as it completes processing prior work (col. 6 lines 27-63).

11. As per claim 8, Achenson teaches the invention as claimed, including the method of claim 7 wherein if the first thread is processing other work when the work prepared by the second thread is placed in the queue, and when the first thread completes processing of the work in the queue, using the first thread to mark the completed work as complete, wherein subsequent work from the second thread is made to wait until the previous work in the first thread is marked complete (col. 5 line 26 - col. 6 line 63).

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12. As per claim 9, Achenson teaches the invention as claimed, including the method of claim 7 wherein the first thread is reused to process other work (col. 5 lines 45-47; col. 6 lines 50-54).

13. As per claims 11-15, Achenson teaches the invention as claimed, including a program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform the method steps of claims 1-5, respectively (Claims 17-18).

Claim Rejections - 35 USC § 103

14. **Claims 6, 10, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Achenson in view of Voll et al. (USPN 6,170,018) (hereinafter Voll).**

15. As per claim 6, Voll teaches the invention as claimed, including the method of claim 4 wherein the program structure destroys the first thread after it completes a desired amount of work (col. 23 lines 28-37).

16. It would have been obvious to one of ordinary skill in the art to combine Achenson and Voll since once a thread has completed processing the work that is allotted to it, or completed a sufficient amount of work, it would be to the benefit of the system to destroy that thread. The reason for this is that an inactive thread occupies memory space that could be used for other purposes. By freeing these resources, more resources can be allocated to other threads, thereby increasing the throughput of the entire system.

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17. As per claim 10, Voll teaches the invention as claimed, including the method of claim 8 wherein the program structure destroys the first thread after it completes a desired amount of work (col. 23 lines 28-37).

18. As per claim 16, Achenson teaches the invention as claimed, including a program storage readable by a machine, tangibly embodying a program of instructions executable by the machine to perform the method steps of claim 6 (Claims 17-18).

Response to Arguments

19. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new grounds of rejection.

20. It is noted that in the previous Office Action, Examiner had indicated that Achenson failed to teach the limitations pertaining to the "first thread having two states, a first state processing work for the program structure and a second state undispached awaiting work to process", as well as other features related to the states of the first thread. However, upon rereading the Achenson reference, it is apparent that Achenson does indeed teach the worked thread being in one of two states, i.e., undispached awaiting work (col. 5 lines 45-47, "A thread will be blocked, or suspend its operation, in waiting for the associated queue to receive a message") or processing work (col. 5 lines 55-59, "The dispatcher thread...is responsible for passing an RPC request message to the appropriate available thread from the pool of worker thread within the process to permit the RPC message to be processed"). The latter citation from

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Achenson also demonstrates how the second thread, i.e. dispatcher thread, prepares work and places it in a queue for the first thread, i.e. worker thread, to process.


21. Applicant's arguments related to the improper combination of Achenson and LiVecchi (USPN 6,427,161) due to LiVecchi teaching away from using a dispatcher thread are also moot, as LiVecchi is no longer relied upon in the rejection.


Conclusion

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Syed Ali
July 21, 2004


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